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ABSTRACT

The primary outcome of any information feedback system must be data for the classroom teacher. For this reason, a system's value has to be measured in terms of its usefulness to the teacher in making instructional decisions. A report should contain only data that the teacher needs and should be produced in an understandable format. User feedback should be solicited to modify the report design. Adequate time should be allowed in the first production run for debugging. Once the system is perfected, arrangements may be made with the data processing operations personnel to institute an automatic procedure which will prepare the input, run the job, and distribute the output. However, it is desirable to have someone familiar with the output to examine it for quirks before distribution. Some of the current productions of the Office of Research and Evaluation of the School District of Philadelphia provide examples of useful teacher reports. One report, for the diagnosis of pupil performance, lists each pupil's answer to each test item, showing at a glance the student's strengths and weaknesses on a given test or subject. (Author/SL)

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PROGRAMMING AND SYSTEMS DESIGN FOR A CLASSROOM INFORMATION FEEDBACK SYSTEM

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PROGRAMMING AND SYSTEMS DESIGN FOR A CLASSROOM INFORMATION FEEDBACK SYSTEM

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The primary outcome of any information feedback system must be data for the classroom teacher. For this reason, a system's value has to be measured in terms of how useful it is in helping the teacher make instructional decisions about her pupils and thereby facilitate the educative process. If the element of usability (and its correlate, understandability) is lacking, the information provided (no matter how accurate or potentially valuable) will be shunted aside as just another piece of useless paper, handed down by "the administration," which will not help the teacher one iota in dealing with the problems she must confront each day in her classroom. Aside from being useful, an information feedback system must be efficient. If efficiency is lacking, the teacher receives the information too late to be of use in her instructional plans. She needs help in deciding how to place her pupils, in determining which topics she should stress to correct weakness in her pupils' skills, or in planning an effective sequence of topics for a newly-implemented course of study.

Design of the System-Usability and Understandability

In order to determine what constitutes useful teacher information, a sincere effort must be made to find out what kinds of information the teachers actually desire. Although it seems almost too obvious a requirement to mention, very often computerized reports are fashioned in such a way that the user finds the information to have little immediate value. This happens particularly when "output" is produced for users other than the teacher (usually program or district administrators or others who require data such as summary statistics across classrooms or schools, data upon which to make policy decisions).

Therefore, care must be taken to provide only those data that teacher can actually use: or stated differently, the output must be tailored to meet the needs of the user.

Once the content of a teacher's report is decided upon, the report must be produced in an understandable format. The terminology and data must be presented in a way both easy to comprehend and pleasing to look at. Wherever possible, English words or commonly understood abbreviations should be used instead of obstruse numerical codes. One way to insure communication is to receive affirmative answers to the following questions: Are the numbers (scores, ratings, category codes, etc.) presented so that their meaning is readily understood? Are the elements of data spaced sufficiently on the page so as to prevent confusion and/or eyestrain? (Sometimes a positive answer to these questions cannot be assured until the next aspect in the development of the information system, described below, is carried out.)

Another way to promote usability is to recognize that systems design is not just a one-time thing. It involves an ongoing relationship between the systems designer and/or programmer and school/field representatives. The system's program (or series of programs) is actually being pilot-tested during its first production runs. It is being tested in the sense that, for that initial period of time, the users of the system's product are getting acquainted with it and sensing what, for them, are the good and bad aspects of that product. They then should forward critical feedback to the systems designer as to how the product can be improved. One shou'd be prepared to make whatever modifications are feasible and reasonable.

Implementation of the System-Efficiency

Initial production runs. In a way, this aspect may be the most frustrating in the entire sequence of a system's development. When a new program is

developed, the operational deadline for its products is often close on the heels of its developmental phase. This means that the program may not have had adequate testing and debugging prior to the time when it is called upon to produce reports. So the first several "production" runs are mass-data test runs during which many unforeseen problems surface. Therefore, one should (1) plan to set aside sufficient time for full-scale testing as well as (2) allow for a greater "turnaround" period than would be scheduled for the regular system. Problems always occur so it is best to allow extra time for them. It is the very rare instance indeed when a system or even a single program encounters full success during its first production run(s).

Ongoing production runs. Once the system's programs are "perfected" to the point where major modifications are no longer needed, an arrangement should be made with the data processing operations personnel to institute an "automatic" procedure which will prepare the input, run the job, and distribute the output. Once in operation, the systems designer and/or programmer need only be called upon in an emergency situation. Even then, however, it is advisable to have someone familiar with the output examine it before it is distributed to the schools. Even with thoroughly debugged programs, unexpected quirks in the data (possibly produced by erroneous coding or keypunching) can produce unexpected quirks in the output. (So says the old maxim: Garbage in, Garbage out.) To maintain the credibility of the system, such quirks should be spotted before distribution and accounted for, perhaps with a note of explanation to the offending user so that the same mistakes will be avoided in the future.

To summarize, the major points in the design of the system are:

1. Produce only the information needed.
2. Produce it in an understandable format.

3. Receive feedback as to its acceptability and suggestions for improvement.

4. Modify the system to conform with reasonable user suggestions.

And the major points in the implementation of the system are:

1. Allow adequate testing time and simulate actual production runs as closely as possible.

2. Make appropriate arrangements for the regular running of the system program(s) with the personnel in the operations area of the data processing installation.

3. Arrange for the examination of the output before distribution so that "garbage" output is not allowed to be distributed without some indication as to the problem.

Some Examples of Useful Teacher Information Reports

Refer to Figures 1A, B, C, and D for abbreviated examples of some teacher reports currently being produced by the Office of Research and Evaluation of The School District of Philadelphia.

The report displayed in Figure 1A represents one of our most widely-used types of computer reports. Because the report is for the diagnosis of pupil performance, the computer program (in FORTRAN IV) has a number of features. Test items can be divided into subtests of varying length (as indicated on the pupil listing by the columns of stars following items 18, 27 and 31. One can see, in the legend in the upper left-hand corner of each page, that subtest 1 of the Sight and Sound Inventory, Form A , comprises items 1 to 18, initial consonants). Each pupil's total number-right score is listed on both pages of the class listing.

In addition, a listing is made of each pupil's answer to each item, abbreviated to one or two characters. For example, if a pupil answers an item correctly, a "+" is printed; if he answers the item incorrectly, the correct answer is printed. Therefore, the report helps the teacher tell at a glance

(reading across the sheet) which items a given child has answered correctly and incorrectly (yielding information of a diagnostic nature about the child's strengths and weaknesses in the content covered by the test). It also gives the teacher information about (reading down the sheet) which items gave her pupils the most trouble (yielding information of a curricular nature about what areas of the content need to receive greater stress in instruction). Below the class listing, the teacher is given the number and percent of pupils in her class who answered each item correctly and the mean score for the class.

It should be noted that "subtest mastery" can be set before the program is run to indicate whether each examinee has effectively mastered the content of each subtest. In the Figure 1A example, mastery is defined as having no more than one incorrect response per subtest. (That is, at least 17 items must be correct out of 18 items in subtest one, eight correct out of nine in subtest two, and three correct out of four in subtest three.) A teacher can make both diagnostic and curricular judgments about how well her pupils mastered each subtest by looking across and down, respectively. In addition, these class data are summarized as the number and percent of the class mastering each subtest (see bottom entry).

In Figure 1B, a class listing for the expanded version of the Sight and Sound Inventory, Form B, with six subtests as explained in the legend at the top, one can tell that the class as a whole had particular trouble with the short-E (SE) vowel sound (36 percent answering correctly) and the AW, OI, and OU sounds (answered correctly by 28, 24, and 32 percent, respectively). On the other hand, 80 percent of the class effectively mastered subtest two on digraphs, and 84 percent of the class effectively mastered subtest three on three-letter combinations. Future instruction would focus primarily on the content covered by subtest five, long and short vowel sounds, because

only 44 percent mastered the items of that subtest, and subtest six, other vowel sounds, mastered by only 16 percent. On the diagnostic level, one can see that while at least 60 percent of the class mastered the first four subtests, pupils MAN and MIL need particular help in those areas, and pupil HOD needs help in final sounds.

In Figure IC, a class listing of the Secondary Group Heading Inventory, the items are divided into six subtests of (supposedly) increasing difficulty. (If such is the case, one may ask why only 23 percent of the class mastered the first level, but this question reflects on the quality of the test, not on the reporting system.) Here the items are indicated, not by their correct answer, but by their type: F for factual, V for vocabulary, and I for inferential. In subtest one, item 7, an inferential item, posed particular difficulty only seven percent of the examinees (one pupil) answered it correctly. The same is true for an increasing number of items in successive subtests, until no one mastered the last two subtests. One can examine each pupil's performance to learn who needs what kind of help. At the third reading level (subtest 1), there are a number of pupils who need help even with factual or vocabulary items. Special instruction may be needed to supplement these pupils' skills in these areas.

In Figure ID, the Arithmetic Concepts subtest of the Iowa Tests of Basic Skills, is shown that the items again are designated by type (C for Currency, etc.), but an indication of subtest mastery is not produced. Interpretation of the report can still be made on an item-by-item basis, as just described.

Although the program producing the above described reports has been in use for about two years, it has undergone several major modifications in response to teacher and supervisor requests. An example is the addition of the subtest mastery feature. Even now, in spite of the fact that its use is widespread and the teachers seem to use it enthusiastically, I have a list of at least a half-dozen suggested improvements which will be made in the near future.

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Figure 1A.

THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF RESEARCH AND EVALUATION
FIELD OPERATIONS RESEARCH
SIGHT AND SOUND INVENTORY--TEACHER REFERENCE FORM

SCHOOL 2 GRADE 1 CLASS 115

TEACHER--DIN

FORM A--31 ITEMS
SUBTEST 1--ITEMS 1 - 18 INITIAL CONSONANTS
SUBTEST 2--ITEMS 19 - 27 FINAL CONSONANTS
SUBTEST 3--ITEMS 28 - 31 RHYMING WORDS

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	1 P	2 M	3 I	4 N	5 F	6 S	7 L	8 B	9 R	10 D	11 H	12 W	13 G	14 K	15 J	16 Y	17 Z	18 V*	19 M	20 F	21 T	22 D	23 G	24 S	25 H	26 B	27 R*	SUBTEST MASTERY 1 2 3 / 17 8 3
BAR	18	P	*	*	*	F	*	L	B	R	*	H	W	*	*	J	Y	*	V*	*	*	*	*	*	*	*	*	R*	2
BEL	22	*	*	*	*	*	*	*	*	*	*	*	W	G	*	*	Y	*	**	N	*	*	D	*	S	*	*	R*	
BOY	24	P	*	*	*	*	*	*	*	*	*	*	W	G	*	*	Y	*	**	*	*	*	*	G	*	*	*	**	2
CAR	16	*	N	*	*	F	*	L	B	*	D	H	W	*	K	*	*	*	V*	N	P	*	D	G	*	*	B	**	3
DAV	25	*	*	*	*	*	*	*	B	*	*	*	*	*	*	*	Y	*	**	*	P	*	D	*	*	*	*	**	
DIN	14	*	M	T	N	F	*	L	B	*	D	H	W	*	*	J	Y	*	**	N	P	T	*	*	*	*	*	**	
EVE	12	*	M	T	*	F	*	L	B	R	*	*	W	*	*	J	*	Z	V*	N	P	T	*	*	S	*	B	R*	
FIE	12	P	M	*	N	F	*	*	B	R	*	H	W	*	K	J	*	*	**	N	P	T	D	G	*	M	B	**	
HOL	20	P	*	*	*	F	*	*	B	*	D	H	*	*	*	*	*	*	**	*	*	T	*	*	S	*	R	**	
JOH	7	P	M	*	N	F	*	*	*	R	D	H	*	G	*	J	Y	Z	V*	N	P	T	D	G	S	M	B	R*	
LAW	18	*	*	T	N	F	*	*	B	*	*	H	W	*	*	J	*	*	**	N	*	T	D	*	S	*	*	**	
LOC	17	*	*	*	N	F	S	L	*	R	*	*	*	*	*	J	*	*	**	N	P	T	*	G	*	M	B	**	
LOM	29	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	**	1 2
MAY	18	P	*	*	N	F	*	L	B	*	*	H	*	G	*	J	*	*	V*	*	*	*	*	G	*	M	*	**	
MAZ	19	P	*	*	N	*	*	L	B	*	D	H	W	*	*	J	*	*	**	*	*	*	*	G	*	M	*	**	
PAU	28	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	P	*	*	*	*	*	*	**	1 2
RIV	30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	**	1 2 3
WAR	23	*	*	*	*	*	*	*	B	*	D	H	*	*	*	*	*	*	**	*	*	*	D	*	*	*	B	**	
WAL	23	P	*	*	*	*	*	*	*	*	*	H	*	*	K	*	*	*	**	N	P	*	D	*	S	*	*	**	3
WIL	30	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	**	1 2 3
WIT	22	*	*	*	*	*	*	*	*	*	*	*	W	*	K	*	*	*	**	N	P	*	*	*	S	M	*	**	
YOT	20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	T	*	*	*	*	*	**	1 2

THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF RESEARCH AND EVALUATION
FIELD OPERATIONS RESEARCH
SIGHT AND SOUND INVENTORY--TEACHER REFERENCE FORM

SCHOOL 2 GRADE 1 CLASS 115

TEACHER--DIN

FORM A--31 ITEMS
SUBTEST 1--ITEMS 1 - 18 INITIAL CONSONANTS
SUBTEST 2--ITEMS 19 - 27 FINAL CONSONANTS
SUBTEST 3--ITEMS 28 - 31 RHYMING WORDS

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	28 ET	29 IL	30 AK	31 OT*
BAR	18	*	*	AK	OT*
BEL	22	*	*	AK	OT*
BOY	24	*	*	AK	OT*
CAR	16	*	IL	*	**
DAV	25	*	*	AK	OT*
DIN	14	ET	IL	*	OT*
EVE	12	ET	*	AK	OT*
FIE	12	ET	*	*	OT*
HOL	20	*	IL	AK	OT*
JOH	7	*	IL	AK	OT*
LAW	18	*	*	AK	OT*
LOC	17	ET	*	*	OT*
LOM	29	ET	*	AK	**
MAY	18	ET	*	*	OT*
MAZ	19	ET	*	*	OT*
PAU	28	*	IL	AK	**
RIV	30	*	*	AK	**
WAR	23	*	IL	AK	OT*
WAL	23	*	*	AK	**
WIL	30	*	*	AK	**
WIT	22	*	IL	AK	OT*
YOT	28	*	*	AK	OT*

DISTRICT 2 SCHOOL 38 GRADE 1 CLASS 115 NUMBER OF PUPILS--22

		ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
MEAN-- 20.68	NO. OF PUPILS WITH ITEM RIGHT		14	17	19	15	12	21	15	11	17	16	11	12	18	18	13	16	20	17	12	12	14	14	15	15	16	15	18
	PCT--		63	77	86	68	54	95	68	50	77	72	50	54	81	81	59	72	90	77	54	54	63	63	68	68	72	68	81

	ITEM	28	29	30	31
NO. OF PUPILS WITH ITEM RIGHT		15	15	6	6
PCT--		68	68	27	27

SUBTEST MASTERY

SUBTEST NUMBER.....	1	2	3
MASTERY CRITERION.....	17	8	3
NUMBER OF PUPILS ACHIEVING MASTERY.....	5	7	4
PERCENT OF PUPILS ACHIEVING MASTERY.....	22	31	18

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THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF RESEARCH AND EVALUATION
FIELD OPERATIONS RESEARCH
SIGHT AND SOUND INVENTORY--TEACHER REFERENCE FORM

SCHOOL 2 GRADE 2 CLASS 106

TEACHER--CAS

FORM B--54 ITEMS
SUBTEST 1--ITEMS 1-19 BLENDS
SUBTEST 2--ITEMS 20-23 DIGRAPHS
SUBTEST 3--ITEMS 24-28 3-LETTER COMBS.
SUBTEST 4--ITEMS 29-37 FINAL SOUNDS
SUBTEST 5--ITEMS 38-46 LONG/SHORT VOWELS
SUBTEST 6--ITEMS 47-54 OTHER VOWEL SOUND

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	SUBTEST MASTERY
		OR	TR	ST	BL	SL	CR	SP	SW	PR	BR	FL	GL	CL	SM	GR	PL	FR	SN	SC*	SH	PH	CH	TH*	SC	ST	TH	SP	SP*	18 3 4 8 8 7
BLA	33	*	*	*	*	*	*	SP	SW	*	*	*	*	*	*	*	*	*	SN	**	SH	*	CH	**	*	*	*	*	**	3
BLA	49	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	PH	*	**	*	*	*	*	**	1 2 3 5
DAR	48	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4
MAY	49	*	*	*	*	*	CR	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5
MAY	52	*	*	*	*	SL	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5 6
MCD	33	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**SH	*	*	**	*	ST	TH	*	**		1 2
LAW	33	DR	*	*	BL	SL	*	*	*	PR	BR	*	*	*	*	*	PL	FR	*	**SH	*	*	**	*	ST	*	*	**		2 3
MIL	22	DR	*	ST	*	*	*	*	*	*	*	FL	GL	CL	*	*	PL	FR	*	**SH	*	CH	TH*	*	ST	TH	SP	SP*		
MCC	53	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5 6
SEA	43	DR	*	*	BL	*	*	*	*	*	BR	*	*	*	*	*	*	*	*	SC*	*	*	*	**	*	*	*	*	**	2 3 4
MAN	17	DR	TR	ST	BL	*	CR	*	SW	*	*	FL	*	CL	SM	*	PL	FR	*	SC*	SH	PH	CH	TH*	SC	*	TH	*	SP*	
WAD	36	DR	TR	*	*	SL	*	*	*	*	*	FL	*	*	*	*	*	*	*	**	*	*	CH	TH*	*	*	*	*	**	3
ALS	49	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5
BRA	31	*	*	*	BL	*	*	*	*	*	BR	FL	GL	CL	*	*	PL	*	*	**SH	PH	CH	TH*	*	*	*	*	*	**	3
CAN	53	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5 6
CAR	42	*	*	*	*	*	*	*	*	PR	BR	*	*	*	*	*	*	*	*	**SH	*	*	*	**	*	*	*	SP	**	2 3
DOU	48	*	*	*	*	SL	*	*	*	*	*	*	*	*	*	*	*	FR	SN	**	*	*	*	**	*	*	*	*	**	2 3 4 5
GAS	51	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5
GIL	43	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	ST	*	SP	**	1 2 4
HIG	46	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3
MCC	43	*	*	*	BL	*	*	*	SW	PR	*	*	*	*	*	*	*	*	*	**	*	PH	*	**	*	*	*	*	**	2 3 4 5
PIT	51	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4 5
RAN	51	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	ST	*	*	**	1 2 3 4 5 6
SHE	49	*	*	*	*	*	*	*	*	PR	*	*	*	*	*	*	*	*	*	**	*	*	*	**	*	*	*	*	**	1 2 3 4
UNO	40	*	*	*	*	*	CR	*	*	*	*	*	*	*	*	*	*	*	*	**	*	PH	*	**	*	*	*	*	**	1 2 3 4

SCHOOL 2 GRADE 2 CLASS 106

TEACHER--CAS

FORM B--54 ITEMS
SUBTEST 1--ITEMS 1-19 BLENDS
SUBTEST 2--ITEMS 20-23 DIGRAPHS
SUBTEST 3--ITEMS 24-28 3-LETTER COMBS.
SUBTEST 4--ITEMS 29-37 FINAL SOUNDS
SUBTEST 5--ITEMS 38-46 LONG/SHORT VOWELS
SUBTEST 6--ITEMS 47-54 OTHER VOWEL SOUND

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
		NG	SK	CH	TH	NK	SH	ST	ND	MP*	LU	LE	SO	SA	LO	SU	SI	LA	SE*	AR	IR	AW	OI	OU	AY	OY	OO*
BLA	33	NG	*	CH	*	NK	SH	*	*	MP*	*	LE	*	*	*	SU	*	LA	SE*	*	IR	AW	OI	OU	AY	OY	OO*
BLA	49	*	*	*	TH	NK	*	*	*	**	*	*	*	*	*	*	*	*	**	*	*	*	OI	OU	*	*	**
DAR	48	*	*	*	*	*	*	*	*	**	*	*	*	*	*	SU	*	*	SE*	*	IR	AW	OI	OU	*	*	**
MAY	49	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	**	*	*	AW	OI	OU	*	OY	**
MAY	52	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	**	*	*	*	OI	*	*	*	**
MCD	33	NG	*	CH	*	NK	SH	ST	*	**LU	LE	SO	*	*	SU	*	*	SE*	AR		IR	AW	OI	OU	AY	OY	OO*
LAW	33	*	*	CH	TH	*	*	ST	*	**	*	*	SO	*	*	*	SI	*	**AR		IR	AW	OI	OU	*	OY	OO*
MIL	22	*	*	CH	TH	NK	*	ST	ND	MP*LU	*	SO	SA	*	*	SI	LA	SE*	AR		*	AW	*	OU	AY	OY	OO*
MCC	53	*	*	*	*	*	*	*	*	**	*	*	*	*	SU	*	*	**	*		*	*	*	*	*	*	**
SEA	43	*	*	*	*	NK	*	*	*	**	*	*	SO	*	*	*	SI	*	SE*	*	IR	AW	OI	*	*	*	**
MAN	17	*	SK	CH	TH	NK	SH	ST	ND	MP*	*	LE	*	*	LO	*	SI	LA	SE*	*	*	AW	OI	OU	AY	*	OO*
WAD	36	*	*	*	TH	NK	SH	*	*	**	*	*	*	*	*	SU	*	LA	SE*	*	IR	AW	OI	OU	*	OY	OO*
ALS	49	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	SE*	*	*	AW	OI	OU	AY	*	**
BRA	31	*	*	CH	TH	*	*	*	*	**LU	*	SO	SA	*	*	SI	LA	SE*	AR		*	AW	OI	*	AY	*	OO*
CAN	53	*	*	*	*	*	*	*	*	**	*	*	SO	*	*	*	*	*	**	*	*	*	*	*	*	*	**
CAR	42	*	*	*	TH	*	*	*	ND	**	*	*	SO	*	*	*	SI	*	SE*	*	*	AW	OI	*	AY	*	**
DOU	48	*	*	*	*	NK	*	*	*	**	*	*	*	*	*	*	*	*	**	*	*	*	OI	OU	*	*	**
GAS	51	*	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	*	SE*	*	*	AW	*	OU	*	*	**
GIL	43	NG	*	*	*	*	*	*	*	**	*	*	*	*	*	*	*	LA	SE*	AR	*	AW	OI	OU	AY	*	OO*
HIG	46	*	*	*	*	NK	SH	*	*	**	*	*	*	*	*	SU	*	*	SE*	AR	IR	AW	*	OU	*	*	**
MCC	43	*	*	*	*	NK	*	*	*	**	*	*	*	*	*	*	*	LA	**	*	IR	AW	OI	OU	*	*	OO*
PIT	51	*	*	*	*	*	*	*	*	**	*	*	*	SA	*	*	*	*	**	*	*	*	OI	OU	*	*	**
RAN	51	*	*	*	*	*	*	ST	*	**	*	*	*	*	*	*	*	*	SE*	*	*	*	*	*	*	*	**
SHE	49	*	*	*	*	*	*	*	*	**	*	*	SO	*	*	*	*	*	SE*	*	*	AW	OI	*	*	*	**
UNO	40	*	*	*	*	*	*	*	*	**LU	LE	SO	SA	LO	SU	*	LA	SE*	*	*	AW	OI	OU	AY	*	**

DISTRICT 2 SCHOOL 40 GRADE 2 CLASS 106 NUMBER OF PUPILS--25

	MEAN-- 42.60	ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
NO. OF PUPILS WITH ITEM RIGHT			20	23	23	20	21	22	24	22	21	21	21	23	22	24	25	21	21	23	23	18	20	20	21	24	20	22	22	23
		PCT--	80	92	92	80	84	88	96	88	84	84	84	92	88	96	100	84	84	92	92	72	80	80	84	96	80	88	88	92

	ITEM	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
NO. OF PUPILS WITH ITEM RIGHT		22	24	19	18	15	20	20	22	22	21	21	19	21	23	18	19	17	9	19	17	7	6	8	16	19	16
	PCT--	88	96	76	72	60	80	80	88	88	84	84	76	84	92	72	76	68	36	76	68	28	24	32	64	76	64

SUBTEST MASTERY

SUBTEST NUMBER	1	2	3	4	5	6
MASTERY CRITERION	18	3	4	8	8	7
NUMBER OF PUPILS ACHIEVING MASTERY	15	20	21	15	11	4
PERCENT OF PUPILS ACHIEVING MASTERY	60	80	84	60	44	16

BEST COPY AVAILABLE

Figure 1C.

THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF RESEARCH AND EVALUATION
SECONDARY GROUP READING INVENTORY

SCHOOL 2 GRADE 7 CLASS 311

TEACHER--TER

ITEMS 1-10--THIRD RDG LEVEL ITEMS 31-40--SIXTH RDG LEVEL
ITEMS 11-20--FOURTH RDG LEVEL ITEMS 41-50--SEVENTH RDG LEVEL
ITEMS 21-20--FIFTH RDG LEVEL ITEMS 51-60--EIGHTH RDG LEVEL F-----FACTUAL ITEMS
V--VOCABULARY ITEMS
I--INFERENTIAL ITEMS

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	1 F	2 F	3 F	4 F	5 I	6 I	7 I	8 V	9 V	10 V*	11 F	12 F	13 F	14 F	15 I	16 I	17 I	18 V	19 V	20 V*	21 F	22 F	23 F	24 F	25 I	26 I	27 I	28 V	29 V	30 V*	SUBTEST MASTE 1	2	3	4	5	6
ALE	26	*	*	*	F	I	I	I	V	V	V*	*	F	*	*	I	*	I	V	*	V*	*	*	*	*	I	*	I	*	*	V*		3				
BEL	27	*	F	F	*	*	I	I	V	V	V*	*	F	*	F	I	*	*	*	*	V*	*	*	F	*	*	*	*	*	*	V*		3				
BEL	31	*	*	*	*	*	I	I	*	V	V*	F	*	*	*	I	I	I	V	*	V*	*	*	F	*	*	*	I	V	V	V*						
COR	43	*	*	*	*	*	I	V	*	V*	V*	*	F	*	*	*	*	*	*	*	V*	*	*	F	*	*	*	*	*	*	V*	1	2	3			
DAN	33	*	*	*	F	*	I	*	V	*	V*	*	*	*	*	*	*	*	*	*	V*	F	F	*	F	*	*	I	V	V	V*		2		4		
DIA	39	*	*	*	*	*	*	I	V	V	V*	*	*	*	*	*	*	I	*	*	V*	*	*	F	*	*	*	*	*	*	V*		2	3			
JEN	35	*	*	*	F	I	*	I	*	*	V*	*	*	*	*	I	*	*	*	*	V*	*	*	F	*	*	*	*	*	*	V*		2	3			
JOH	49	*	*	*	*	*	*	I	*	*	V*	*	*	*	*	*	*	*	*	*	V*	*	*	F	*	*	*	*	*	*	V*	1	2	3	4		
JOH	29	*	F	*	F	I	*	I	V	*	V*	*	F	*	*	I	*	*	*	*	V*	F	*	F	*	*	*	I	V	*	V*		2				
MIC	43	*	F	*	F	*	*	I	*	*	V*	*	F	*	*	I	*	*	*	*	V*	*	*	F	*	I	*	*	*	*	V*		2		4		
SMI	35	*	*	*	*	*	I	V	*	V*	V*	*	*	F	*	I	*	I	*	*	V*	*	*	F	*	I	I	I	V	*	V*	1					
SMI	32	*	F	*	*	I	*	I	*	*	V*	*	*	*	*	I	*	*	*	*	V*	F	*	*	F	*	*	*	*	*	V*		2				
THO	25	*	*	*	F	I	I	I	V	V	V*	*	*	*	*	I	*	V	V	*	V*	F	F	F	F	*	I	I	V	V	V*						

THE SCHOOL DISTRICT OF PHILADELPHIA
OFFICE OF RESEARCH AND EVALUATION
SECONDARY GROUP READING INVENTORY

SCHOOL 2 GRADE 7 CLASS 311

TEACHER--TER

ITEMS 1-10--THIRD RDG LEVEL ITEMS 31-40--SIXTH RDG LEVEL
ITEMS 11-20--FOURTH RDG LEVEL ITEMS 41-50--SEVENTH RDG LEVEL
ITEMS 21-20--FIFTH RDG LEVEL ITEMS 51-60--EIGHTH RDG LEVEL F-----FACTUAL ITEMS
V--VOCABULARY ITEMS
I--INFERENTIAL ITEMS

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	31 F	32 F	33 F	34 F	35 I	36 I	37 I	38 V	39 V	40 V*	41 F	42 F	43 F	44 F	45 I	46 I	47 I	48 V	49 V	50 V*	51 F	52 F	53 F	54 F	55 I	56 I	57 I	58 V	59 V	60 V*
ALE	26	F	*	*	*	*	I	*	*	V	V*	*	F	*	*	I	I	I	V	V	V*	F	F	F	F	I	I	I	V	V	V*
BEL	27	F	F	F	F	*	I	*	*	V	V*	F	*	F	F	I	I	I	*	V	V*	F	F	F	*	I	I	I	*	V	V*
BEL	31	*	*	*	*	I	*	*	V	*	V*	*	*	F	*	*	*	*	*	V	V*	F	F	F	F	I	I	I	V	V	V*
COR	43	*	*	*	*	*	*	*	V	V	V*	F	F	*	*	*	I	I	V	V	*	*	*	*	*	I	I	I	*	*	*
DAN	33	*	*	*	*	*	*	*	*	V	V*	*	F	F	*	*	I	*	V	V	*	F	F	F	*	I	I	I	V	V	V*
DIA	39	F	*	*	*	*	*	*	*	V	V*	*	F	F	*	I	I	*	*	V	*	F	F	F	I	*	I	V	V	V*
JEN	35	F	*	*	*	*	*	I	V	V	V*	F	*	*	*	I	I	I	V	*	V*	F	F	F	*	I	I	I	V	*	*
JOH	47	*	*	*	*	I	*	*	*	*	*	F	F	*	*	*	*	I	V	*	*	F	F	*	*	I	I	*	*	*	*
JOH	29	*	*	*	F	*	I	I	*	V	*	*	F	*	*	I	I	I	V	V	V*	*	F	F	*	I	I	I	V	V	V*
MIC	43	*	*	*	F	*	*	*	*	*	*	F	*	*	*	*	I	I	*	V	*	*	*	F	*	I	I	*	V	*	*
SMI	35	*	*	*	*	I	I	*	*	V	*	*	*	*	*	I	I	I	V	V	V*	*	F	*	*	I	*	I	V	V	*
SMI	32	F	*	*	*	I	*	I	*	V	V*	F	*	*	*	I	I	I	V	V	*	*	F	F	F	I	I	I	V	V	V*
THO	25	*	*	*	F	I	*	I	V	V	V*	*	*	*	*	I	I	I	V	*	*	*	F	F	*	I	I	I	V	V	V*

DISTRICT 2 SCHOOL 31 GRADE 7 CLASS 311 NUMBER OF PUPILS--13

	MEAN-- 34.38 ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
NO. OF PUPILS WITH ITEM RIGHT		13	9	12	7	8	8	1	5	8	12	12	8	12	12	5	11	9	10	12	7	9	11	4	9	11	10	7	7	10	7
	PCT-- 100	69	92	53	61	61	7	38	61	92	92	61	92	92	38	84	69	76	92	53	69	84	30	69	84	76	53	53	76	53

	ITEM	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
NO. OF PUPILS WITH ITEM RIGHT		8	12	12	9	8	9	9	9	3	4	7	7	9	12	5	2	3	4	3	8	8	2	3	9	0	2	2	3	4	5
	PCT--	61	92	92	69	61	69	69	69	23	30	53	53	69	92	38	15	23	30	23	61	61	15	23	69	0	15	15	23	30	38

SUBTEST MASTERY

SUBTEST NUMBER.....	1	2	3	4	5	6
MASTERY CRITERION.....	8	8	8	8	8	8
NUMBER OF PUPILS ACHIEVING MASTERY.....	3	8	6	3	0	0
PERCENT OF PUPILS ACHIEVING MASTERY.....	23	61	46	23	0	0

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Figure 1D.

OFFICE OF RESEARCH AND EVALUATION
IOWA TESTS OF BASIC SKILLS
ARITHMETIC CONCEPTS (LEVEL 6)
OCTOBER 1973

SCHOOL 2 GRADE 80 CLASS 801 TEACHER--ROB

C--CURRENCY M--MEASUREMENT
D--DECIMALS N--NUMERALS AND NUMBER SYSTEMS
E--EQUATIONS P--PER CENTS--MEANING AND USE
F--FRACTIONS R--RATIO AND PROPORTION
G--GEOMETRY W--WHOLE NUMBERS

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
		F	W	F	F	F	G	F	M	F	G	N	F	M	F	N	F	D	N	M	N	W	F	F	D	F	N	G	N	F*
AIL	27	*	*	*	*	*	*	*	*	*	G	*	F	M	*	*	F	D	*	*	*	*	*	F	*	*	N	*	*	**
AVE	7	F	*	F	F	F	G	F	M	*	G	*	F	M	F	N	F	D	N	M	N	*	*	F	D	F	*	G	N	F*
BAR	7	*	*	F	*	F	*	F	M	F	G	M	F	M	*	*	F	D	*	M	M	*	N	F	F	D	F	N	G	N	F*
BOR	15	*	*	*	F	F	G	F	M	*	G	M	F	M	*	*	*	D	*	*	M	N	*	F	F	D	F	*	G	N	F*
BRA	11	*	W	*	*	F	G	F	*	F	*	M	F	M	*	*	F	D	*	*	*	*	W	F	F	D	F	N	G	N	F*
BUR	16	*	*	F	*	F	G	F	*	F	G	*	F	M	F	*	*	*	*	M	*	F	*	F	*	D	F	N	G	N	F*
CAR	27	*	*	*	F	*	*	*	*	*	*	F	M	*	*	*	F	D	*	*	*	*	*	F	*	F	*	*	*	*	F*
COX	8	F	W	F	F	*	*	F	M	F	*	*	F	M	F	N	F	*	N	*	M	N	W	F	F	D	*	N	*	N	F*
DAR	20	*	*	F	*	*	*	F	*	*	G	*	F	M	*	*	*	*	*	*	N	*	*	F	D	F	*	N	*	N	F*
DAR	3	F	W	F	*	F	G	F	N	F	*	*	F	M	F	N	F	D	N	M	N	W	F	F	D	F	N	G	N	N	F*
DA	13	F	*	*	*	*	G	*	M	F	G	M	F	*	F	*	*	D	*	M	*	N	W	F	F	D	F	N	G	N	F*
DAV	22	F	W	*	*	*	G	*	*	*	*	*	F	M	*	N	*	*	*	*	*	N	W	*	F	D	*	N	*	N	F*
FIS	27	*	*	*	F	*	*	*	*	*	*	*	*	*	*	*	F	*	*	*	*	N	W	*	F	D	*	N	*	N	F*
GOO	7	F	W	*	F	*	G	F	M	F	G	M	F	M	F	N	*	D	N	M	*	N	W	F	*	D	F	N	G	N	F*
GUV	11	*	*	*	*	F	G	*	*	*	G	M	F	M	*	N	F	D	*	*	M	N	W	F	F	D	F	N	G	N	F*
GRA	18	*	*	*	*	*	G	*	M	*	*	M	F	M	F	N	*	*	*	*	*	*	*	F	D	F	N	G	N	F*
GRE	11	*	W	F	F	F	*	F	M	*	*	M	F	M	F	N	*	*	N	M	M	*	W	*	*	D	F	N	G	N	F*
HAL	6	F	W	F	F	F	*	F	M	F	G	*	F	M	F	*	*	D	N	M	M	N	W	*	F	D	*	N	G	N	F*
HAL	13	*	W	*	*	F	G	F	M	*	*	M	F	M	F	*	*	D	N	M	*	N	W	F	F	D	*	N	*	N	F*
HAR	31	*	*	*	*	F	*	*	*	*	G	M	*	M	*	*	*	*	N	M	*	N	W	*	*	D	*	N	*	N	F*
HAR	15	*	W	*	*	F	G	*	*	*	*	*	F	M	F	N	F	D	N	M	*	*	W	F	F	D	*	N	G	N	F*
JAC	25	*	*	*	*	*	G	*	*	*	G	M	*	M	*	*	*	*	*	*	*	*	W	*	F	D	*	N	G	N	F*
JOH	13	F	W	F	F	F	G	*	*	*	G	*	F	M	F	*	F	D	*	M	*	N	*	F	*	D	F	N	*	N	F*
JOH	7	F	W	F	*	F	G	F	*	F	G	*	F	M	F	N	*	D	N	M	M	N	W	F	F	D	*	N	*	*	F*
MIL	25	*	W	*	*	F	*	F	*	*	*	*	*	M	*	N	*	D	*	*	*	N	W	F	F	D	*	N	*	N	F*
PET	14	*	W	*	*	F	G	*	*	*	*	*	F	M	F	N	F	D	N	M	M	N	*	F	F	D	*	N	*	N	F*
CLA	23	*	*	*	*	F	*	*	*	*	G	M	F	M	*	*	F	D	*	*	*	N	W	F	F	D	*	N	*	N	F*
ROB	19	*	W	*	*	*	G	*	M	*	*	M	F	M	*	*	F	*	*	*	*	*	W	F	F	D	*	N	G	N	F*
TOM	19	*	W	*	*	*	*	F	*	*	G	*	F	M	*	*	F	D	*	*	*	*	W	F	*	D	F	*	G	*	F*
YAT	10	F	W	*	F	F	G	F	*	F	*	N	F	*	F	N	F	D	*	M	*	N	W	F	*	D	F	N	G	N	F*

TEACHER--ROB

C--CURRENCY M--MEASUREMENT
D--DECIMALS N--NUMERALS AND NUMBER SYSTEMS
E--EQUATIONS P--PER CENTS--MEANING AND USE
F--FRACTIONS R--RATIO AND PROPORTION
G--GEOMETRY W--WHOLE NUMBERS

* MEANS THE ITEM IS CORRECT

PUPIL NAME	ITEMS RIGHT	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
		D	N	D	D	N	D	W	F	R	W	D	N	D	D	N	D	M	F*
AIL	27	D	M	D	*	*	D	W	*	M	*	D	*	*	*	*	D	M	F*
AVE	7	D	M	*	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
BAR	7	D	M	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
BOR	15	D	M	D	D	*	D	W	*	M	*	D	N	*	D	N	D	M	F*
BRA	11	D	M	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
BUR	16	D	*	D	D	N	*	W	F	M	W	D	N	D	D	N	D	M	F*
CAR	27	D	*	D	D	N	*	W	*	M	*	D	N	D	D	N	D	M	F*
COX	8	D	M	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
DAR	20	*	M	D	D	N	D	W	F	M	W	D	N	*	D	N	D	M	F*
DAR	3	D	M	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
DA	13	D	M	D	D	N	D	W	*	M	W	D	N	D	*	N	D	M	F*
DAV	22	D	M	D	D	*	D	W	F	*	*	D	*	*	D	N	D	M	F*
FIS	27	D	M	*	D	N	*	W	F	M	W	D	N	D	D	N	D	M	F*
GOO	7	*	M	D	D	N	*	W	F	M	W	D	N	D	D	N	D	M	F*
GUV	11	D	M	*	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
GRA	18	D	*	D	D	N	D	W	F	M	W	D	N	D	D	*	D	M	F*
GRE	11	*	*	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
HAL	6	D	M	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
HAL	13	D	M	D	*	N	D	*	F	M	W	*	N	D	D	N	D	M	F*
HAR	31	*	M	*	*	*	*	W	*	M	*	*	N	D	D	*	D	M	F*
HAR	15	*	M	D	D	N	D	W	*	M	W	*	N	D	D	*	D	M	F*
JAC	25	*	M	D	D	N	*	*	F	M	W	D	N	D	D	N	D	M	F*
JOH	13	*	M	D	D	*	D	W	F	*	W	D	N	D	D	N	D	M	F*
JOH	7	D	M	D	D	N	D	W	F	M	W	D	N	D	D	N	D	M	F*
MIL	25	D	M	D	*	*	*	W	*	M	*	D	*	D	D	N	D	M	F*
PET	14	D	*	D	D	N	*	W	F	M	W	D	*	D	D	N	D	M	F*
CLA	23	D	M	D	*	*	D	W	*	M	D	*	*	*	*	*	D	M	F*
ROB	19	D	M	D	D	*	D	W	F	M	W	D	*	D	D	N	D	M	F*
TOM	19	D	M	D	D	*	D	W	F	M	W	D	N	D	D	N	D	M	F*
YAT	10	D	M	D	D	N	D	*	F	*	W	*	N	D	D	N	D	M	F*

DISTRICT 2 SCHOOL 13 GRADE 80 CLASS 801 NUMBER OF PUPILS--30

		ITEM	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
MEAN--	15.77																															
NO. OF PUPILS WITH ITEM		RIGHT	20	12	20	21	9	12	14	18	20	14	15	4	3	14	17	15	10	20	15	20	14	11	11	9	7	14	7	15	5	5
		PCT--	66	40	66	70	30	40	46	60	66	46	50	13	10	46	56	50	33	66	50	66	46	36	36	30	23	46	23	50	16	16

	ITEM	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
NO. OF PUPILS WITH ITEM	RIGHT	7	5	4	5	9	8	3	8	3	6	4	8	5	3	5	8	0	1
	PCT--																		